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The Financial Condition of U.S. Agriculture:
Past, Present, Implications for the Future

by

David Lins

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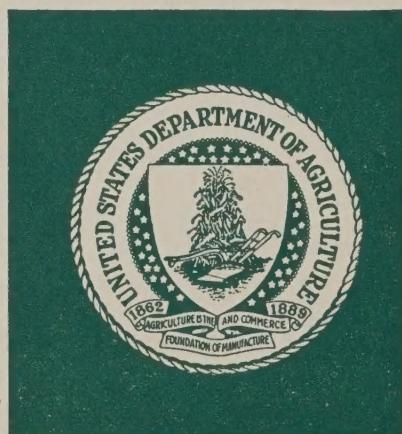


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ESCS Staff Report
National Economics Division
Economics, Statistics, and Cooperatives Service
U.S. Department of Agriculture

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THE FINANCIAL CONDITION OF U.S. AGRICULTURE: PAST, PRESENT, IMPLICATIONS FOR THE FUTURE By David Lins, National Economics Division, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, Urbana, Illinois. 61801 June 1979.

ABSTRACT

Changing financial structure has resulted in a group of large farm firms with substantial wealth who at the same time face growing liquidity problems. There are also many small farm firms who rely almost exclusively on nonfarm income. Large farm firms feel a growing need for protection from downside variation and growth income. This should lead to greater use of contract production and greater demand of government price support programs.

Key words: structure, farms, inflation, financial management

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THE FINANCIAL CONDITION OF U.S. AGRICULTURE: PAST, PRESENT, IMPLICATIONS FOR THE FUTURE

It is a real honor for me to be given the opportunity to speak to such a distinguished group of extension farm management specialists. In your daily contact with farmers and lenders you are likely well informed on the financial condition of agriculture in your state. Therefore, I will focus my attention not at the state level, but rather for the nation as a whole.

I believe the past and present financial conditions of U.S. agriculture can be analyzed in much the same way you analyze the financial condition of an individual farmer. Key information comes from current and historical balance sheets, income statements, and cash flow statements. These statements are prepared at the sector level by USDA economists and can be used to assess the overall financial health of the farming sector.

The Balance Sheet

The balance sheet identifies the current market value of assets, liabilities, and net worth. Asset values are increasing rapidly, but much of the increase is due to inflation. Debt is also increasing rapidly, in fact more rapidly than the increase in asset values (Table 1). The debt-to-equity ratio is low, but is increasing. Nonetheless net worth has increased substantially over time.

The aggregate balance sheet data reveal some clear trends in asset composition. As a percent of total assets, real estate and machinery are increasing. As a percent of total assets; livestock, crops, and financial assets have declined. The result of these changes in asset composition are clear. A growing proportion of the value of farm sector assets are held in a form that has low liquidity. Therefore, farm operators need to be more concerned with protecting other sources of liquidity, including credit reserves.

Aggregate balance sheet figures mask the substantial differences that exist among different size farms. A breakdown of the sector balance sheet by sales class of farm is presented in Table 2. Notice that the debt-to-equity ratio is the highest for farms with gross sales over \$100,000 and that the ratio drops rapidly for lower sales classes.

Notice also that over one-fourth of the assets are controlled by farms with over \$100,000 in gross sales. Yet these farms represent only 6 percent of the total farms. The average value assets on these farms is well over one million dollars, and debt is over a quarter million (Table 3). Average net worth is near one million dollars. Clearly there are many millionaires farming.

At the other end of the scale, roughly 35 percent of all farms have less than \$2,500 in gross sales. Debt-to-equity ratios are very low. Most of these farms are operated as a hobby or as a part-time occupation and most operators of these units rely on off-farm jobs as their major source of income.

From previous discussion it is clear that farm firms have experienced a rapid growth in nominal net worth. But how does such growth compare with the overall inflation rate and how does the growth in net worth compare with other sectors? Information on this nature is presented in Table 4.

For the period 1970 to 1977, net worth of the farm business sector increased at a compound annual rate of 12.3. This compares to a national growth rate in equity of 10.5 percent and an inflation rate in the general economy of 6.2 percent. Thus net worth of the farm business sector has increased both in real terms and relative to other sectors!

An important feature of the growth in net worth of the farm business sector is the variability in the rate of growth. Although not readily apparent from the information in Table 4, the annual growth in net worth is more variable (as measured by the coefficient of variation) for the farm business sector than for any other sector.

The Income Statement

The U.S. Department of Agriculture annually publishes farm income estimates in Farm Income Statistics. State estimates and estimates of income by economic class of farm are also prepared.

One of the major uses of farm income estimates is to compare the income position of the farm and nonfarm population. Per capita disposable income of the farm population has typically been much less than that of the nonfarm population. However, as shown in Figure 1, the trend has clearly been toward equality of per capita disposable income for the farm and nonfarm population.

Published farm income statistics also allow one to compare incomes of different groups of farms. Figure 2 shows the average farm and off-farm income of different groups of farmers and ranchers classified by their gross farm sales. Notice that off-farm income as a percent of total net income declines as gross farm sales increase. However, total net income per farm for the lowest gross farm sales class is higher than total net income for farms with intermediate gross farm sales. Some analysts have concluded from this data that U.S. agriculture is moving toward two divergent types of farm firms--one type with very large operations and small reliance on off-farm income and the other type with primary reliance on off-farm income with farming activities constituting a part-time or hobby operation. The implication is that

medium-size farms with little off-farm income will be forced to change toward either larger farm operations or toward greater reliance on off-farm sources of income.

Rate of Return on Investment

By combining balance sheet and income statement information we can compute an annual rate of return on investment. These annual rates of return can then be compared with nonfarm investments to assess the financial health and vitality of the farm sector. Comparisons of this nature must be made with care because of the different characteristics of investments.

Investors have three potential sources of return on an investment: (a) an annual income return, (b) a capital gains (or loss) return, and (c) psychic or nonmonetary return. Various investments generate different types of returns and these differences must be accounted for when comparing returns on investment. In addition, the level of business and financial risk is not the same for all investments. In general, the higher the level of risk, the higher should be the expected rate of return on investment.

As shown in Table 5, returns on investment can be measured in several ways. Assets can be measured on a cost or current market value basis. In addition, one can distinguish between returns on total investment and returns on equity investment. Currently the only regularly published estimate of returns to investment in farm production assets is the annual income rate of return on equity in farm production assets.

Table 6 identifies annual rates of return on total investment in common stocks, long term U.S. bonds and farm production assets. Rates of return from annual income, rates of return in the form of capital gains, and total returns are reported.

Key points relative to Table 6 are:

- . rates of return in the form of annual income have been fairly equal for investments in common stocks and farm production assets since 1960. However, with few exceptions the rate of return in the form of annual income for long-term U.S. bonds has been higher than for common stock or farm production assets.
- . rates of return in the form of annual income have been much more variable for farm production assets than for common stocks or investment in production assets.

- rates of return in the form of capital gains (or losses) tend to dominate the returns in the form of annual income. This is particularly true for common stocks and farm production assets.
- rates of return in the form of capital gains are much more variable for investments in common stock and long-term U.S. bonds than for investment in farmland.
- since 1970 total rates of return on investment in farm production assets have on average far exceeded returns on investment in common stock or long-term U.S. bonds. In addition, the riskiness of investment in farm production assets, as measured by the relative variation in rates of return, has been much lower on farm production assets.
- common stock and long-term bonds are much more readily available than farm production assets as an investment option for small savers. This may explain in part the relatively higher returns on investment in farm production assets.

Table 7 identifies annual income rates of return on equity in farm production assets and on stockholders equities for selected manufacturing industries. Key points relative to Table 7 are:

- Measuring rates of return on equity with assets valued on a cost basis as compared to current market valuation of all investment nearly doubles the rates of return to farm production assets.
- Rates of return to equity in farm production assets have averaged well below manufacturing industries. However, the coefficient of variation on rates of return, one measure of business risk, suggests that farmers face much more business risk than do manufacturing corporations.
- Debt-to-equity ratios--a measure of financial risk--suggest that farm firms have substantially lower financial risk than most manufacturing firms.

Gross Ratio

The ratio of production expenses to gross farm income--the gross ratio--reveals considerable insights to the changing financial structure of agriculture. Table 8 presents information on trends in this ratio by size class of farm.

While there is considerable variation from year to year, the gross ratio for "all farms" has trended upward over time. This means that farm firms are relying more and more on purchased inputs in the production process. Notice also that the gross ratio is much higher for large farms than for small farms. However, the gross ratio has not trended upward over time for large farms.

To appreciate the impact of an increasing gross ratio we have to consider what it does to the potential variation in net income. In Table 9 we present a hypothetical example to illustrate the effects of a 10 percent reduction in gross income for different levels of the gross ratio. With a gross ratio of 70 percent--the average for all farms in the 1960's--a 10 percent reduction in gross income leads to a 33.3 percent reduction in net income. With the gross ratio at 85 percent, net income would fall by 66.7 percent, and with the gross ratio at 90 percent, net income would fall by 100 percent!

Clearly farm operators, particularly those on farms with high gross sales and a high gross ratio, need to be concerned about the downside variation in gross income. A 10 percent drop in gross income could mean a hefty drop in net income. Several options have been used to ensure against downside variations in gross income. First, farmers have demanded price protection in the form of government programs. For example, target prices are an attempt to limit downside variation. And because the gross ratio is higher for higher sales class farms, these farmers may push as hard or harder than smaller farmers for such government support programs.

Second, the potential variation in net income due to a high gross ratio is likely to lead to a greater demand for forward pricing contracts. Again the greatest demand for forward pricing is likely to come from farms with large sales because the gross ratio is higher on those farms.

The Cash Flow Statement

In Table 10 we present a highly aggregated cash flow statement for the U.S. farm sector. Cash sources of funds include net cash income from farm and nonfarm sources, as well as net increases in debt. Total cash sources of funds have more than tripled since 1960, but an increasing proportion of the funds is coming from net increases in borrowing.

Since production expenses have been netted out of the sector cash flow statement, the two major uses of funds are expenditures on capital items and personal consumption. Expenditures on purchased capital have shown a steady trend upward, while personal consumption has fluctuated with total cash sources of funds. The implication is that farmers continue to invest in capital items at a fairly steady rate, while adjusting their consumption in relation to changes in net income.

Lines 12 and 13 of Table 10, help identify cash income and consumption in real terms, that is, after adjusting for inflation. Since the banner income year of 1973, real income and consumption of the farm sector has declined by roughly 25 percent. Recent improvements in income have helped brighten this picture, however.

The analytical ratios at the bottom of Table 10 help identify the trends in the use of debt capital. In 1960, only 17 percent of the purchased capital was financed with borrowed funds, the remainder came from internal sources of funds. By 1978, almost one-half of the total purchased capital was financed by net increases in debt. Clearly, there is an increasing reliance on external sources of funds to finance the purchase of capital inputs.

The relative burden of debt can be measured as the ratio of debt outstanding to net cash income. As shown in Table 10, the relative burden of debt on net income has increased substantially since 1973. The ratio now stands higher than any period in recent history. It suggests that the liquidity position of farm firms has decreased in recent years.

Implications for the Future

Previous discussion has already specifically identified some of the implications for the future of agriculture as a result of ongoing changes in financial structure. To recall, they are

- . Farm firms have a growing liquidity problem both in the context of the composition of assets and in terms of the relationship between income and debt levels. Lenders, government policy-makers, and extension farm management personnel will need to deal with firms that may have substantial wealth, but at the same time substantial liquidity problems.
- . The growing importance of purchased inputs makes farm firms more vulnerable to downside variations in gross income. This will result in continued pressures for government support programs and will encourage producers to move toward more forward contracts and/or more contract production.
- . Income from all sources--both farm and nonfarm--is lowest for firms with medium amounts of gross farm sales. This is likely to encourage a move toward two divergent types of farm firms--one type with high volume low margin farming operations and the other type with farming activities constituting a hobby or part-time activity. Extension

programs geared to one of these groups is likely to be of little benefit to the other.

The information presented in Tables 1 through 10 also suggest some challenges in financing commercial agriculture which I believe are important today and will continue to be important for some time into the future:

1. Inflation in Land Values:

In recent years the price of farmland has increased much more rapidly than the income generated by land. There are several dimensions to the problems this has created.

- A. One dimension of the problem is that expected future capital gains have become a more important component of land values. But future gains in land values offer no cash income to make loan payments. Consequently in many areas it has become difficult if not impossible to make loan payments on income generated from the land purchased. Rather, the purchaser must have other sources of income--either from off-farm sources or from existing agricultural operations.

The nature of this problem is more clearly displayed in Table 11. Key points relative to Table 11 are:

- . Land at current prices implies a strong expectation of continued increases in land values. Current income capitalized at the rate of inflation accounts for less than one-half of the current value of land.
- . Land at current prices often generates a cash deficiency in meeting loan payments. This cash deficiency increases as the value of land rises.
- . As capital gains become a more important component of land values the problem of the cash flow deficiency increases.
- . Cash flow deficiencies can be handled easier on marginal land than on the prime areas of agricultural production.

One of the effects of this rapid inflation in land values is a selectivity in the people who can acquire farmland. The purchase of land under these circumstances can be most easily handled by individuals or institutions with large financial reserves or with substantial income from nonfarm sources. Young farm operators seldom meet these criteria. Outside equity capital sources, such as mutual funds or foreign investors, often do meet these criteria. These investors are seeking investments with strong capital gains potential, and the

rate of inflation of farm land in recent years has exceeded the rate of inflation in the general economy. As long as this continues, interest in farmland by outside equity capital sources will likely remain strong.

- B. A second dimension of the problem is that farm lenders have not adjusted their lending practices to the dynamics of an inflationary economy. Real estate loans from most lenders require amortization payments which are equal or decline over time. Yet over the course of a long-term loan, the income of the borrower is expected to rise substantially, particularly in an inflationary economy. Why not adjust repayment schedules so that amortization payments increase over time instead of remaining constant or declining? This would allow initial payments to be lower and would help ease the financial strain. And if handled properly, there is little change in the risk position of the lender. On the negative side, this would make it easier to purchase land and that would likely add to inflationary pressures.

2. Risks Associated with Farm Commodity Price Instability:

This issue is probably one of the most important in agricultural today. There are, however, many different dimensions to the problems.

- A. One issue generated by price instability is the question of how lenders serving farm clients should react. How should lenders assess loan repayment ability in the face of substantial price variation? How should lenders react to financing the holding of inventories by farmers "waiting for the best price"? How long do you carry the man? How do lenders react to the producers who wants to borrow money and hedge his position? Will they finance margin calls?
- B. A second dimension of the problem is the search for effective means for farm lenders to offset the risks they face due to farm price instability. In a recent survey of bankers they were asked: "If farm loans were to become more risky in your area than in previous years, what would your bank likely do?"

A large number of bankers indicated that security requirements on farm loans would be increased. A sizeable number indicated they would increase interest rates, while some indicated they would decrease the amount of farm loans made. While these responses could help the bankers position, consider what they do to farm operators. Can farmers offer additional security or will they "lose out" in periods of high risk? If the amount of farm loans is decreased, who loses out? Will shorter loans at higher interest rates create repayment problems in periods of great volatility in commodity prices?

Problems of this nature also require innovative solutions and acceptance of new methods on the part of lenders. As one example, research is now underway at Illinois to investigate the possibilities of farm loan payments being indexed to income levels. This would allow for repayments to rise and fall with the variability in farm income. I believe one of the current and future challenges is to develop techniques that offer greater flexibility in loan repayments.

C. A third dimension of the problem is focused toward how farmers can more effectively deal with price instability. This dimension deals with marketing and production strategies, (hedging and forward contracting) as well as the impact of these strategies on the availability of financing. Evidence shows that the degree of contracting affects the availability of financing. As extension advisers you need to be able to advise your clients on this matter.

3. Farm Business Structure:

Sole proprietorships are the dominant type of business structure in the United States. However, this form of business organization needs to be evaluated very carefully in terms of its effect on: (a) income taxes, (b) estate planning and (c) the availability of financing.

Recent changes in tax laws have lowered corporate tax rates. Tax lawyers suggest that for a farm firm with \$50,000 of taxable income, a switch from a sole proprietorship to a subchapter C corporation could save from \$4,000 to \$8,000 per year in Federal taxes. As farm operators or farm managers, you need to be well informed on the effect of business structure on income taxes paid.

The capital required to operate an economically viable farm has increased. In Central Illinois, farmland is now selling in the \$3,500 per acre range. For a 600 acres farm with land value at \$3,500 per acre, the land alone is worth 2.1 million dollars. Estate planning for such farm operators is essential. The form of business organization strongly influences what can and cannot be done in the estate planning context.

While income taxes and estate planning are the two primary considerations in selecting the appropriate form of business organization, the effects on the availability of debt and equity capital should not be overlooked. As one example, corporations are normally not covered by usury laws while sole proprietors usually are covered by such laws. Likewise, partnerships and corporations are not eligible for Farmers Home Administration limited resource loans unless all partners or shareholders are related by blood or marriage. Sole proprietorships have very limited sources of equity capital, while partnerships and corporations can acquire funds through the sales of stock or partnership interests. The effects of business organization on the acquisition of debt and equity capital are important and need to be evaluated before a change in business structure is finalized.

4. Financial Statements

Management of a farm business requires a wide range of information on financial performance of a business. There is a tendency by some to judge the financial performance of a farm business by the appearance of the buildings, by the number of acres owned, or by the amount of money in the bank. Each of these measures, however, provides a potentially misleading picture of the financial performance of a business.

What is needed is a coordinated set of financial statements--a balance sheet, an income statement, and a cash flow statement. By coordinated I mean that the time framework and concepts underlying the statements should be consistent. For example, a balance sheet for a farm operator which includes nonfarm assets is not coordinated with an income statement which shows only farm business income. Likewise, if the income statement covers a calendar year, then the balance sheets should be on a year-end basis.

To get farm operators to adopt such a coordinated set of financial statements, lenders and extension personnel must help. I know that represents a real challenge, but the potential payoffs are great. Lenders, farmers and research personnel will have better information to base decisions on if we all work toward a coordinated set of financial statements for farm operators.

Table 1: Balance sheet of the farming sector, selected years.^{a/}

Item	1950	1955	1960	1965	1970	1975	1978 ^{b/}	1950	1955	1960	1965	1970	1975	1978 ^{b/}
	-Billion dollars-							-Percent-						
ASSETS														
Physical assets:														
Real estate	77.6	102.2	137.2	167.5	215.8	368.5	525.8	57.7	60.5	65.2	68.7	68.5	71.4	74.2
Non-real estate														
Livestock ^{c/}	12.9	11.2	15.3	14.5	23.5	24.6	32.0	9.6	6.6	7.3	06.0	7.4	4.8	4.5
Machinery and motor vehicles	12.2	18.6	22.7	24.8	32.3	55.7	77.3	9.0	11.0	10.8	10.2	10.3	10.8	10.0
Crops stored on and off-farms ^{d/}	7.6	9.6	7.7	9.2	10.9	23.3	24.6	5.7	5.7	3.7	3.8	3.5	4.5	3.5
Household equipment and furnishings	8.4	9.7	9.2	8.4	9.6	14.0	14.5	6.2	5.8	4.4	3.4	3.0	2.7	2.0
Financial assets:														
Deposits and currency	9.1	9.4	9.2	9.6	11.9	15.1	16.3	6.8	5.6	4.4	3.9	3.8	2.9	2.3
U.S. savings bonds	4.7	5.0	4.7	4.2	3.7	4.3	4.4	3.5	3.0	2.2	1.7	1.2	0.9	0.6
Investments in cooperatives	2.0	3.1	4.2	5.6	7.2	10.5	14.0	1.5	1.8	2.0	2.3	2.3	2.0	2.0
TOTAL	134.5	168.8	210.2	243.8	314.9	516.0	708.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Liabilities:														
Real estate debt	5.6	8.2	12.0	18.9	29.2	46.3	64.2	4.2	4.9	5.7	7.8	9.3	9.0	9.1
Non-real estate debt to:														
CCC ^{e/}	1.7	2.2	1.2	1.6	2.7	0.3	4.5	1.3	1.3	0.6	0.7	0.9	0.1	0.6
Other reporting institutions ^{f/}	2.8	4.0	6.7	10.0	15.8	29.2	42.7	2.1	2.4	3.2	4.1	5.0	5.6	6.0
Nonreporting creditors ^{g/}	2.3	3.2	4.9	6.3	5.3	6.0	8.3	1.7	1.9	2.3	2.6	1.7	1.2	1.2
TOTAL LIABILITIES	12.4	17.6	24.8	36.8	53.0	81.8	119.7	9.3	10.5	11.8	15.2	16.9	15.9	16.9
Proprietors' equities	122.1	151.2	185.4	207.0	261.9	434.2	589.2	90.7	89.5	88.2	84.8	83.1	84.1	83.1
TOTAL	134.5	168.8	210.2	243.8	314.9	516.0	708.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^{a/}Source: Balance Sheet for the Farming Sector, Agricultural Information Bulletin, No. 416. ^{b/}Preliminary.

^{c/}Beginning with 1961, horses and mules are excluded. ^{d/}Includes all crops held on farms and crops held off farms by farmers as security for CCC loans. On Jan. 1, 1978, the latter totaled \$1,827 million. ^{e/}Non-recourse CCC loans secured by crops owned by farmers. These crops are included as assets in this balance sheet. ^{f/}Loans of all operating banks, production credit associations, the Farmers Home Administration, and discounts of the Federal Intermediate credit banks for agricultural credit corporations and livestock loan companies. ^{g/}Loans and credit extended by dealers, merchants, finance companies, individuals and others.

Table 2. Balance sheet of the farming sector by value of sales class, January 1, 1977^a

Item	1A \$100,000 and over	1B to \$99,999	II to \$39,999	III to \$19,999	IV to \$9,999	V to \$4,999	VI Less than \$2,500	All farms								
	Million dollars															
Total																
Assets																
Physical assets:																
Real estate	134,025	118,058	64,835	43,062	30,482	27,095	66,289	483,846								
Nonreal estate:																
Livestock and poultry ¹	8,870	6,759	4,088	2,708	1,948	1,730	2,950	29,053								
Machinery and motor vehicles ²	16,828	18,958	10,793	6,888	4,615	3,621	9,302	71,005								
Crops stored on and off farms ²	7,677	7,259	3,410	1,760	880	440	572	21,998								
Household equipment and furnishings	2,181	2,282	1,647	1,430	1,329	1,343	4,234	14,446								
Financial assets:																
Deposits and currency	5,234	3,096	1,646	1,149	988	974	2,883	15,970								
U.S. savings bonds	729	716	454	375	375	406	1,310	4,365								
Investments in cooperatives	6,902	3,606	1,711	891	465	267	402	14,244								
Total	182,446	160,734	88,584	58,263	41,082	35,876	87,942	654,927								
CLAIMS																
Liabilities:																
Real estate debt	22,636	19,240	6,225	2,830	1,697	1,132	2,830	56,590								
Nonreal estate debt:																
Excluding CCC loans	19,827	11,265	8,562	2,253	1,352	901	901	45,061								
CCC loans ³	373	358	157	72	30	12	10	1,012								
Total liabilities	42,836	30,863	14,944	5,155	3,079	2,045	3,741	102,663								
Proprietors' equities	139,610	129,871	73,640	53,108	38,003	33,831	84,201	552,264								
Total	182,446	160,734	88,584	58,263	41,082	35,876	87,942	654,927								
Percent																
Debt to equity ratio	30.7	23.8	20.3	9.7	8.1	6.0	4.4	18.6								

Table 3. Balance sheet of the farming sector by value of sales class, January 1, 1977, averages per farm ^a

Item	1A \$100,00 and over	1B \$40,000 to \$99,999	II \$20,000 to \$39,999	III \$10,000 to \$19,999	IV \$5,000 to \$9,999	V \$2,500 to \$4,999	VI Less than \$2,500	All farms
	Dollars							
	ASSETS:							
Physical assets:								
Real estate	827,315	339,247	201,978	138,463	100,934	89,128	69,195	178,805
Nonreal estate:								
Livestock and poultry ¹	54,753	19,422	12,735	8,707	6,450	5,691	3,079	10,737
Machinery and motor vehicles ²	103,876	54,477	33,623	22,148	15,281	11,911	9,710	26,240
Crops stored on and off farms	47,389	20,859	10,623	5,659	2,914	1,447	597	8,129
Household equipment and furnishings	13,463	6,557	5,131	4,598	4,401	4,418	4,420	5,338
Financial assets:								
Deposits and currency	32,309	8,897	5,128	3,695	3,271	3,204	3,010	5,902
U.S. savings bonds	4,500	2,058	1,414	1,206	1,242	1,336	1,367	1,613
Investments in cooperatives	42,605	10,362	5,330	2,865	1,540	878	420	5,264
Total	1,126,210	461,879	275,962	187,341	136,033	118,013	91,798	242,028
CLAIMS								
Liabilities:								
Real estate debt	139,728	55,287	19,392	9,100	5,619	3,724	2,954	20,913
Nonreal estate debt:								
Excluding CCC loans	122,389	32,371	26,673	7,244	4,477	2,964	941	16,652
CCC loans ³	2,303	1,029	489	232	99	39	10	374
Total liabilities	264,420	88,687	46,554	16,576	10,195	6,727	3,905	37,939
Proprietors' equities	861,790	373,192	229,408	170,765	125,838	111,286	87,893	204,089
Total	1,126,210	461,879	275,962	187,341	136,033	118,013	91,798	242,028
Distribution of farms by sale class	6.0	12.9	11.9	11.5	11.2	11.2	35.3	100.0

¹ Excluding horses, mules, and commercial broilers. ² All crops held on farms including crops under CCC loans and crops held off farms as security for CCC loans to farmers. ³ Nonrecourse CCC loans secured by crops owned by farmers. These crops are included as assets in this balance sheet.

^a Source: Balance Sheet for the Farming Sector, Supplement No. 1, Agriculture Information Bulletin No. 416, October, 1978.

Table 4: Net worth of selected sectors of the U.S. economy^{a/}

Year	Farm business sector	Nonfarm noncorporate business	Nonfinancial corporate business	National
-Billion dollars-				
1970	244.9	368.7	478.8	3160.9
1971	264.0	377.0	508.7	3354.4
1972	296.2	408.6	541.3	3675.5
1973	372.6	464.0	584.7	4184.5
1974	408.2	530.9	648.7	4768.3
1975	458.5	578.6	709.4	5257.3
1976	517.7	623.5	775.2	5783.2
1977	552.6	689.5	828.9	6367.0
-percent-				
Annual compound rate of growth	12.3	9.3	8.1	10.5

a/Source: Division of Research and Statistics, Board of Governors of the Federal Reserve System.

Figure 2: Net income per farm operator from farm and nonfarm sources, 1977.

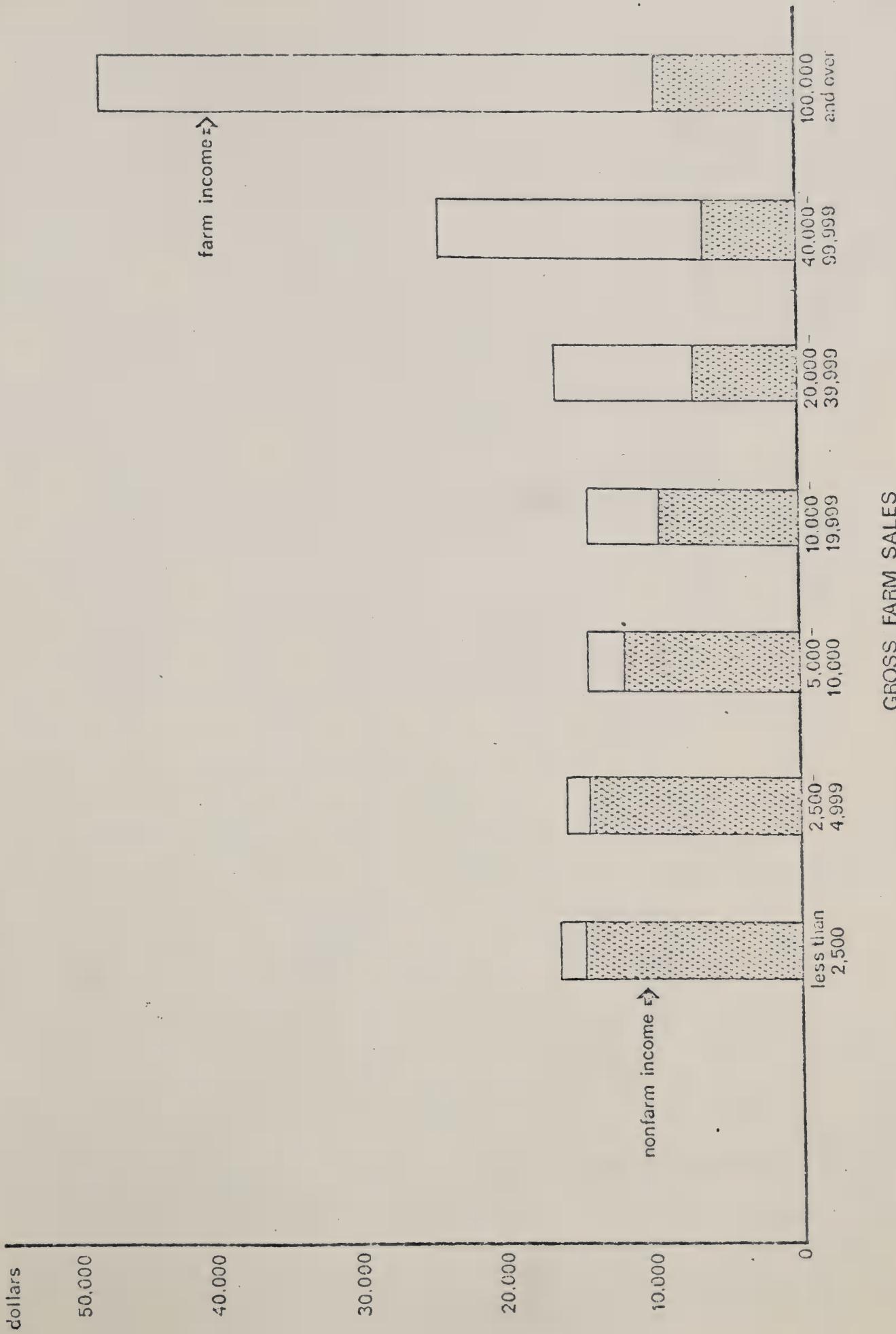


Figure 1: Per capita disposable income of the farm population as a percent of the per capita disposable income of the nonfarm population.

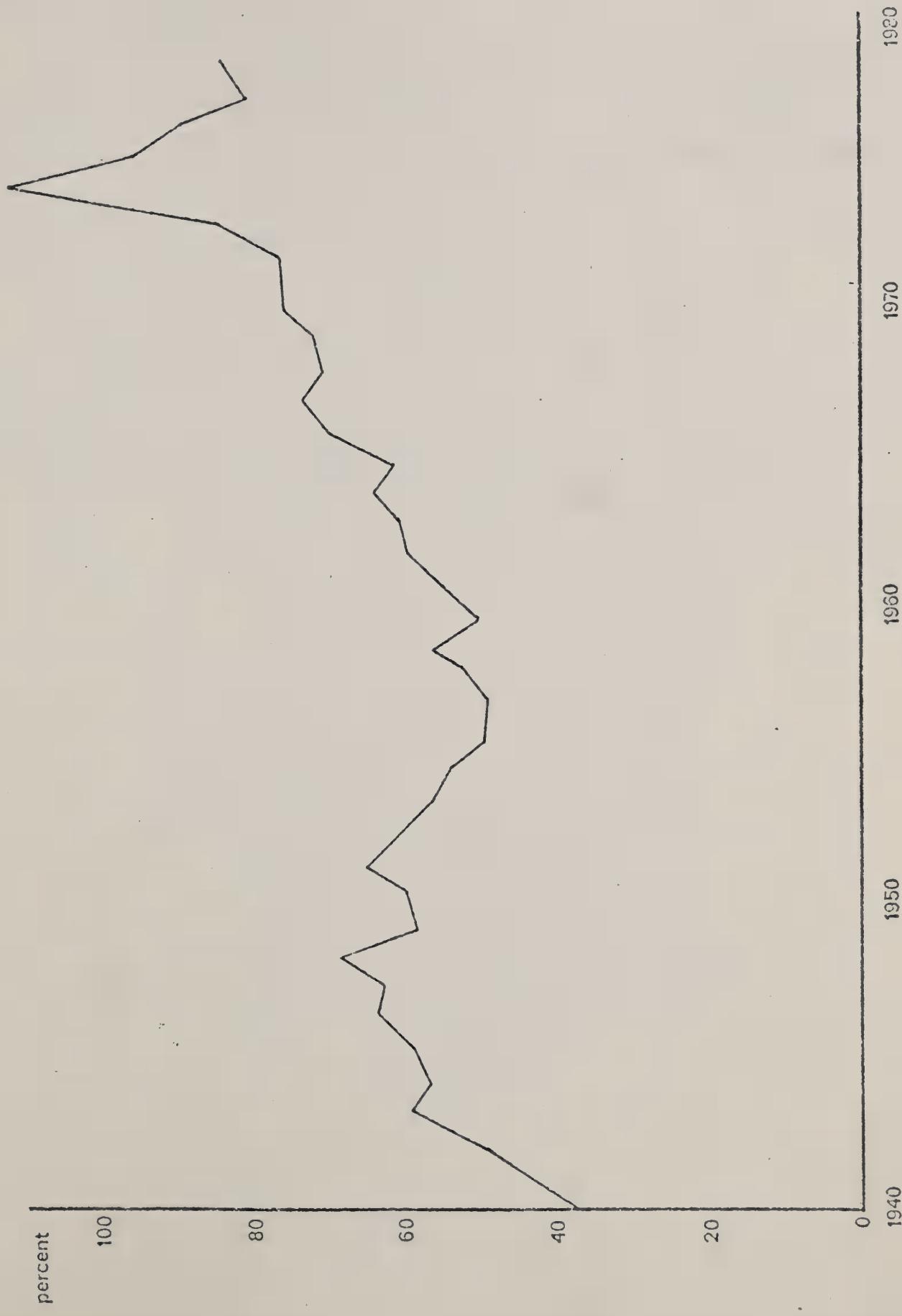


Table 5: Alternative methods of measuring annual rate of return on investment.

Component of return	Book value or cost basis valuation of assets		Current market valua- tion of assets	
	Total investment	Equity in investment	Total investment	Equity in investment
Rate of return				
Annual income return	xx		b/ xx	b/ xx a/ xx
Capital gains return	xx		xx	b/ xx xx
TOTAL RETURN	xx		xx	b/ xx xx

- a/ Currently the only regularly published estimate of rate of return on investment for farm production assets.
 b/ Selected comparisons of this nature between farm and nonfarm investments are presented later in this paper.

Table 6. Annual rate of return on total investment in common stocks, long-term government bonds and in farm production assets. (Current market valuation of assets)

Year	Return from annual income				Return from capital gains or losses a				Total return			
	Common stock	Long-term U.S. bonds	Farm production assets	Common stock	Long-term U.S. bonds	Farm production assets	Common stock	Long-term U.S. bonds	Farm production assets	Long-term U.S. bonds	Common stock	Total return
<i>Annual average</i>												
1960-64	3.20	4.00	3.48	8.79	- .23	3.71	11.99	3.77	7.19			
1965-69	3.18	5.01	4.24	5.54	- 5.19	5.75	8.72	- .18	9.99			
<i>Annual</i>												
1970	3.83	6.59	4.20	-14.94	- 6.20	3.96	-11.11	.39	8.16			
1971	3.14	5.74	3.98	18.11	11.95	7.92	21.25	17.69	11.90			
1972	2.82	5.63	5.43	11.10	1.45	12.82	13.94	7.08	18.25			
1973	3.06	6.30	9.79	- 1.62	- 8.60	22.37	1.44	- 2.30	32.16			
1974	4.47	6.99	6.01	-22.88	- 8.52	8.57	-18.41	- 1.53	14.58			
1975	4.32	6.98	5.19	2.80	.14	12.36	7.11	7.12	17.55			
1976	3.77	6.78	3.61	19.77	2.95	14.42	23.54	9.73	18.03			
1977	4.56	7.06	3.33	- 3.75	- 3.97	8.25	0.81	3.09	11.58			
1978 ^b	5.28	7.89	4.49	- 2.11	-10.51	12.96	3.17	- 2.62	17.45			

Coefficient of Variation in Annual Rate of Return

18.9	23.5	33.9	281.8	216.1	63.8	156.0	175.7	50.6
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a Returns from value change reflect primarily unrealized capital gains

b Preliminary.

Table 7: Annual income rates of return on equity in farm production assets and stockholders equities for manufacturing industries (book value basis of asset valuation).^{a/}

Year	Farm production assets	All manufacturers	Food and kindred products	Petroleum and coal products	Textile mill products
--Percentage:					
1972	9.7	18.4	20.2	11.0	13.8
1973	20.0	21.8	22.8	14.9	16.5
1974	11.1	23.0	23.8	25.8	15.4
1975	9.8	18.8	24.6	17.8	9.0
1976	5.4	22.7	24.9	20.3	15.1
1977	5.5	23.2	22.0	19.9	16.4
1978	8.4	24.0	22.2	19.0	21.0
<hr/>					
\bar{x}	10.0	21.7	22.9	18.4	15.3
C.V. ^{b/}	49.3	10.2	7.6	25.3	23.5
D/E ^{c/}	.39	.91	1.01	.70	.95

a/ Source: Adapted from a statement by Howard Hjort before House Appropriations Subcommittee for Agriculture, Rural Development, and Related Agencies, Feb. 13, 1979.

b/ Coefficient of variation in annual rate of return.

c/ Debt divided by book value equity.

Table 8: Production expenses as a percent of gross production income for the farm production sector.

Year	Farms ^{a/}		
	All	Sales over \$100,000	Sales less than \$100,000
	--percent--		
Annual average			
1960-64	72	89	69
1965-69	75	88	70
Annual			
1970	76	87	70
1971	78	89	73
1972	75	84	68
1973	69	75	63
1974	72	78	67
1975	78	85	72
1976	80	86	74
1977	81	88	75

a/ Farm income estimates are before inventory adjustments and before income taxes.

Table 9: A hypothetical illustration of the effects of the gross ratio on variability in net income.

Item	Gross ratio of:		
	70%	85%	90%
Gross income	\$100	\$200	\$300
Production expenses	70	170	270
Net income	30	30	30
Gross income reduced by 10%	90	180	270
Net income with gross income reduced by 10%	20	10	0
Percent			
Percent reductions in net income due to 10% reduction in gross income	33.3	66.7	100

Table 10. Cash sources and uses of funds for the U.S. farm sector, selected years.^{a/}

	1960	1965	1970	1973	1975	1978
Cash sources of funds:^{b/}						
1 Net cash income from farm and nonfarm sources	22.3	28.8	37.6	65.0	60.0	69.9
2 Net flow of real estate loans	.8	2.3	1.1	5.6	4.8	7.5
3 Net flow of nonreal estate loans ^{c/}	.4	1.7	1.2	4.3	4.2	7.4
4 Total cash sources of funds ^{d/}	23.5	32.8	39.9	74.9	69.0	84.8
Cash uses of funds:^{d/}						
5 Purchases of machinery and motor vehicles	2.8	4.2	4.9	7.6	8.7	10.1
6 Capital improvements to real estate assets	1.7	1.9	2.4	3.1	4.7	6.2
7 Other capital purchases ^{e/}	-5.5	1.0	1.5	2.5	1.0	2.4
8 Purchases of real estate from discontinuing proprietors	3.0	4.3	4.1	11.4	9.8	12.7
9 Total purchased capital	7.0	11.4	12.9	24.6	24.2	31.4
10 Personal consumption and other cash uses	16.5	21.4	27.0	50.3	44.8	53.4
11 Total cash uses of funds	23.5	32.8	39.9	74.9	69.0	84.8
Real dollar flows:						
12 Total net cash income/GNP deflator (1958=100)	21.6	26.0	27.8	41.6	32.3	31.8
13 Personal consumption and other cash uses/GNP deflator (1958=100)	16.0	19.3	20.0	32.2	24.1	24.3
Analytical ratios:						
14 Total net flow of loans/total purchased capital (2+3: 9)	17	35	18	40	37	47
15 Debt outstanding/total net cash income	111	128	141	100	136	170

^{a/} Source: U.S. Department of Agriculture, Agricultural Finance Outlook, Nov., 1978.	^{b/} Cash sources of funds from sale of real estate to the nonfarm sector are not included due to the lack of data.	^{c/} Does not include CCC loans.	^{d/} Gross cash farm operating expenses have been deducted from gross cash farm income.	^{e/} Includes net additions to household furnishings, commercial bank deposits and currency, and purchases of breeding livestock.	Purchases of breeding livestock are estimated as a percentage of total expenditures for the purchase of livestock. Census data are used to estimate the percentage values.
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Table 11: Net present values per acre of land for alternative levels of annual net after-tax cash flow, inflation rates of land, and desired rates of return.^{a/}

If you expect:		Price you can pay per acre to get a return of:		
An annual net after-tax cash flow per acre of:	An annual rate of growth in net after-tax cash flow of:	An annual rate of inflation of land value of:	9 percent after taxes	Cash supplies or deficiency in year one ^{b/}
<u>Panel A</u>				
\$ 20	5%	6%	\$ 708	\$-15.74
40	5%	6%	1,416	-31.49
60	5%	6%	2,124	-47.23
80	5%	6%	2,831	-62.98
100	5%	6%	3,539	-78.72
<u>Panel B</u>				
\$ 20	8%	8%	\$1,383	\$-49.85
40	5%	8%	2,767	-99.70
60	5%	8%	4,150	-149.55
80	5%	8%	5,533	-199.40
100	5%	8%	6,916	-249.25

a/ Calculations are based upon the assumption that the buyer is in the 28 percent tax bracket, has a 30 year planning horizon, and finances the purchase with a 30 percent downpayment and a loan for 30 years at 9 percent interest.

b/ Net after tax cash flow plus tax savings on the interest payments minus the annual loan payment.

